

What is claimed is:

1. A signal processing system comprising
 - 5 at least one user-set parameter for establishing user-determined system settings,
 - at least one compander,
 - 10 a system volume control for setting system gain, and
 - at least one transform engine responsive to the at least one user-set parameter for controlling operation of the compander and setting the system volume control.
- 15 2. The signal processing system of claim 1 wherein the user-set parameter includes at least one of user volume control level, user minimum output level, and source input dynamic range.
- 20 3. The signal processing system of claim 1 wherein the transform engine controls the operation of the compander by setting at least one of a group comprising kneepoints, attack and release parameters, gain calculation coefficients, and zero dB offset values.
- 25 4. The signal processing system of claim 1 wherein the at least one compander comprises a plurality of compressors, and at least a plurality of such compressors is responsive to the transform engine.
- 30 5. The signal processing system of claim 1 wherein the at least one transform engine comprises a plurality of transform engines and the at least one compander comprises a plurality of compressors, and each such transform engine controls at least one associated compressor.
- 35 6. The signal processing system of claim 5 further including a central power estimator mixer responsive to the plurality of compressors.
7. The signal processing system of claim 1 further including

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an input signal preprocessor responsive to an input signal for supplying a processed input to the compander, and wherein the compander operates on the processed input to provide a compander output to the system volume control.

5 8. The signal processing system of claim 7 wherein the input signal preprocessor includes an input level adjuster.

9. The signal processing system of claim 7 wherein the input signal preprocessor includes at least one of a group comprising input selection, analog-to-digital conversion, bandsplit filtering and equalization.

10. The signal processing system of claim 7 further including
an output signal processor responsive to an output of the system volume
15 control for generating a system output.

11. The signal processing system of claim 10 wherein the system output is at least one of a group comprising single channel audio output, multi-channel audio output, equalized outputs, and multi-amplified outputs.

20 12. The signal processing system of claim 3 further including

a statistics engine for monitoring at least one compander operating parameter and for generating a histogram in accordance with the monitored
25 compander operating parameter.

13. The signal processing system of claim 12 further including
an input level adjuster responsive to an input signal, and wherein the
30 statistics engine monitors at least one operating parameter of the input level adjuster.

14. The signal processing system of claim 12 wherein the statistics engine further includes an analysis engine for analyzing the histogram and
35 generating a control signal in accordance therewith, and wherein the compander is responsive thereto.

15. The signal processing system of claim 12 wherein the statistics engine further includes an analysis engine for analyzing the histogram and generating a control signal in accordance therewith, and wherein the input level adjuster is responsive thereto.
- 5 16. The signal processing system of claim 1 wherein the at least one user-set parameter comprises a user interface for establishing user-set operation, set-up and configuration commands.
- 10 17. The signal processing system of claim 16 further including a calibrator/annunciator responsive to the user interface for implementing in the compander the user-determined system settings.
- 15 18. The signal processing system of claim 10 further including
 - a noise extractor responsive to the system output and an environmental input for generating a compensation input to the transform engine.
- 20 19. A signal processing system comprising
 - at least one compander,
 - a system volume control for setting system gain,
 - an input signal preprocessor responsive to an input signal for supplying an input to the compander, and wherein the compander operates on the input to provide a compander output to the system volume control.
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 - at least one transform engine responsive to at least one user-set parameter
- 30 for controlling at least one operating characteristic of the compander and the system volume control.
 - an output signal processor responsive to an output of the system volume control for generating a reference signal,
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 - a noise extractor responsive to the reference signal and an environmental input for generating a compensation input to the transform engine.

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20. A signal processing system comprising
- an output signal processor for receiving an input signal and generating an
5 output reference signal,
- a noise extractor responsive to the reference signal and an environmental
input for generating a compensation input, and
- 10 a volume control responsive to the compensation input for establishing an
offset to system gain.
21. The signal processing system of claim 20 further including
- 15 a plurality of output signal processors each receiving an input signal and
generating an output reference signal, and wherein the noise extractor is
responsive to the plurality of output reference signals.
22. The signal processing system of claim 21 further including
- 20 a plurality of volume controls responsive to the compensation input.
23. The signal processing system of claim 20 further including
- 25 an input level adjuster responsive to an input signal for adjusting the input
signal to expected parameters.
24. The signal processing system of claim 23 wherein the input level adjuster
includes at least one function of a group comprising input selection, analog-
30 to-digital conversion, bandsplit filtering and equalization.
25. The signal processing system of claim 23 further including
- a statistics engine responsive to historical data for modifying system
35 operating parameters in accordance therewith.
26. The signal processing system of claim 20 further including a user interface

responsive to the input signal for establishing user-set operation, set-up and configuration commands.

27. The signal processing system of claim 26 further including a
5 calibrator/annunciator responsive to the user interface for adjusting system settings.

28. The signal processing system of claim 18 further including
10 a calibrator/annunciator responsive to the noise extractor for adjusting operating parameters of the compander.

29. The signal processing system of claim 18 further including
15 a calibrator/annunciator responsive to a user interface for adjusting operating parameters of the compander.

30. The signal processing system of claim 28 further including
20 a statistics engine responsive to the noise extractor for adjusting operating parameters of the compander.

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